

REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. **Objection to Drawings Under 37 CFR §1.83(a)**

This objection has been addressed by cancelling claim 7.

2. **Formalities**

The claims and specification have been revised to place the application in proper U.S. format and to correct various minor grammatical and idiomatic errors, including the errors noted in items 2, 4, and 5 on page 3 of the Official Action.

In addition, page 8 has been amended to explicitly state that the radiation patch is “spaced-from and not in contact with the second ground plane,” as is clearly illustrated in original Fig.3b (as well as Figs. 3a, 8, 10, and 12). The reason for this amendment is to provide proper antecedent basis for corresponding language added to claim 1.

Because the changes are all formal in nature or clearly supported by the original description, it is respectfully submitted that the changes do not involve new matter.

3. **Rejection of Claims 1-9 Under 35 USC §102(b) in view of U.S. Patent No. 4,791,423 (Yokoyama)**

This rejection is respectfully traversed on the grounds that the Yokoyama patent fails to disclose or suggest:

- a. a radiation device having just **two** ground planes (claim 2 now recites that the radiation device includes a single ground plane element consisting of just two ground planes, whereas Fig. 3A of the Yokoyama patent clearly shows **three** ground planes); or

- b. a radiation device in which a radiation patch is connected solely to a first ground plane element, via the feeding-in device, and is not in contact with the second ground plane (the radiation device of Yokoyama includes a shorted radiation patch, *i.e.*, one that is connected to one of the transverse ground planes, as illustrated in Fig. 3B of the Yokoyama patent).

The reason that the antenna disclosed in the Yokohama patent utilizes three ground planes is to improve radiating characteristics. Basically, the third ground plane compensates for the asymmetry of contact between the radiation patch and the second sheet, the contact between the radiation patch and the second ground plane being for the purpose of reducing the size of the antenna. In contrast, the claimed invention uses the second ground plane to improve the gain and beamwidth of the antenna, without shorting the radiation patch.

As a result of these differences, the antenna of Yokoyama does not operate in the same manner as the claimed antenna. In fact, the antenna of Yokoyama most closely resembles the antenna shown in Fig. 1 of the present application, labeled as “PRIOR ART,” which has three ground planes and a radiation patch that is shorted (in contact with) one of the transverse ground planes. As explained in lines 10-15 on page 3 of Applicant’s specification, this structure increases the cost and affects the appearance of products using the antenna.

Because the Yokoyama patent does not disclose all elements recited in claims 1-9, withdrawal of the rejection under 35 USC §102(b) is respectfully requested.

4. Rejection of Claims 10 and 11 Under 35 USC §103(a) in view of U.S. Patent Nos. 4,791,423 (Yokoyama) and 6,366,243 (Isohatala)

This rejection is respectfully traversed on the grounds that the Isohatala patent, like the Yokoyama patent, fails to disclose or suggest a radiation device that includes a single ground plane element consisting of two ground planes, or one in which a radiation patch is connected solely to a first ground plane element and is not directly connected to the second ground plane,

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as recited in claim 1. Furthermore, the Isohatala patent fails to disclose or suggest a radiation device that has two ground planes *and* a circular patch, as recited in claim 10, or a shorted structure installed between the radiation patch and the first of two ground planes, as recited in claim 11.

The Isohatala patent is directed to a planar antenna with two resonating frequencies. The radiating element of Isohatala is circular, but only coincidentally so since it does not utilize any of the grounding structures of the claimed invention or of Yokoyama. As a result, the Isohatala patent could not have suggested modification of the antenna of Yokoyama in order to include a circular radiation patch, much less two ground planes as claimed. Inclusion of a circular radiation patch would actually make it more difficult to short the radiation patch to the second ground plane, and therefore one of ordinary skill in the art would not have considered using the circular radiation patch of Isohatala in the antenna of Yokoyama.

Because the Yokoyama and Isohatala patents fail to disclose positively recited features of the invention, including the two ground planes and non-shorted structure of claim 1, and the combined structures of claims 1, 10, and 11, withdrawal of the rejection of claims 10 and 11 under 35 USC §103(a) is respectfully requested.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

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